

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Cancelled).
2. (Currently Amended) The method of claim 34, wherein the at least one non-data bearing carrier is a pilot tone.
3. (Currently Amended) A ~~The~~ method of claim 1, wherein the comprising:
identifying ~~of the~~ at least one carrier of a plurality of carriers is in ~~the~~ a non-data bearing state, further including
receiving information as to which carriers of the plurality of carriers are to be in a non-data bearing state, and
selecting the at least one non-data bearing carrier based on the information; and
modulating the at least one non-data bearing carrier with random data.
4. (Original) The method of claim 3, wherein the at least one non-data bearing carrier is used for a function besides data transmission including channel characterization.
5. (Original) The method of claim 4, wherein the at least one non-data bearing carrier is used for one of synchronization, carrier recovery and timing recovery.
6. (Currently Amended) The method of claim 34, wherein prior to modulating the at least one non-data bearing carrier, the method further comprises producing the random data as a pseudo-random bit stream.
7. (Currently Amended) The method of claim 34, wherein the modulating of the at least one non-data bearing carrier is performed in accordance with Orthogonal Frequency Division Multiplexing (OFDM).

8. (Currently Amended) A The method of claim 1, wherein the comprising:
identifying of the at least one carrier of a plurality of carriers in the-a non-data bearing state, comprises: receiving a carrier map from a remotely located system, the carrier map is produced at the system in response to conducting channel estimation analysis on the plurality of carriers to indicate which carriers are unreliable; and
modulating the at least one non-data bearing carrier with random data.

9. (Original) The method of claim 8, wherein the carrier map indicates which of the plurality of carriers is deemed to be in an unreliable state.

10. (Original) A multi-carrier modulation system comprising:
a feedback link;
a multiplexer unit coupled to the feedback link, the multiplexing unit, including input ports and output ports, to receive as input a transmission data and a random data and, for each output port, to transmit one of the transmission data and the random data based on information transmitted over the feedback link; and
a modulator to modulate a non-data bearing carrier with the random data.

11. (Original) The multi-carrier modulation system of claim 10, wherein the modulator further outputs a multi-carrier modulated signal inclusive of the modulated, non-data bearing carrier.

12. (Original) The multi-carrier modulation system of claim 10, wherein the modulator to modulate a plurality of carriers that correspond in number to a number of output ports.

13. (Original) The multi-carrier modulation system of claim 11, wherein the modulator modulates the non-data bearing carrier with the random data when the information indicates that the non-data bearing carrier is unreliable.

14. (Original) The multi-carrier modulation system of claim 13, wherein non-data bearing carrier is determined to be unreliable through prior analysis of the carrier at a receiver using channel estimation.

15. (Original) The multi-carrier modulation system of claim 10 further comprising a random bit generator coupled to a first input port of the input ports.

16. (Original) The multi-carrier modulation system of claim 10 further comprising a pseudo-random bit generator coupled to a first input port of the input ports.

17. (Original) The multi-carrier modulation system of claim 10, wherein the modulator performs modulation in accordance with an Orthogonal Frequency Division Multiplexing (OFDM) modulation scheme.

18. (Original) The multi-carrier modulation system of claim 11, wherein the feedback link enables receipt of the information from a remotely located receiver system receiving the multi-carrier modulated signal.

19. (Original) A network comprising:
a system coupled to a first link; and
a first multi-carrier modulation (MCM) system in communication with the network transceiver over a second link, the first MCM system to identify at least one carrier of a plurality of carriers is in a non-data bearing state based on feedback information provided by the system and to modulate the at least one non-data bearing carrier with random data.

20. (Original) The network of claim 19, wherein the first link is an Alternating Current (AC) power line.

21. (Original) The network of claim 20, wherein the system is a network transceiver for routing data over the AC power line.

22. (Original) The network of claim 19, wherein the system is a second multi-carrier modulation (MCM) system.

23. (Original) The network of claim 19, wherein the first MCM system comprises: a multiplexer unit in communication with the system, the multiplexing unit, including input ports and output ports, to receive as input a transmission data and a random data and, for each output port, to transmit one of the transmission data and the random data based on the feedback information provided by the system; and
a modulator to modulate the at least one non-data bearing carrier with the random data

24. (Original) The network of claim 19, wherein the first MCM system is a modem.

25. (Original) The network of claim 19, wherein the first MCM system is a computer with wireless connectivity.

26. (Cancelled).

27. (Cancelled).